

## CLAIMS:

1. Apparatus for 3D-x-ray imaging of an object, comprising a system having an x-ray source and an x-ray image detector which both are adjustable with respect to the object in order to obtain in use at least one series of 2D-images of the object, and a processor connected to the detector for calculating a 3D-image of the object derived from the series of  
5 2D-images, characterized in that the system operates at different intensity levels to at least obtain a first series of 2D-images at a low intensity level and a second series of 2D-images at a high intensity level and which low intensity level is predetermined at a point to substantially avoid saturation of the x-ray image detector, and that the processor is arranged to merge the images from the first series of 2D-images with corresponding images from the  
10 second series of 2D-images prior to calculating the 3D-image.
2. Apparatus according to claim 1, characterized in that pixels of the images of the second series of 2D-images above a predetermined threshold are replaced by corresponding pixels of images from the first series of 2D-images, and that the thus merged  
15 2D-images are subsequently used to calculate the 3D-image.
3. Apparatus according to claim 2, characterized in that the thresholding of the second series of 2D-images is performed at a predetermined level which slightly differs for neighbouring pixels of the 2D-images.  
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4. Apparatus according to anyone of claims 1-3, wherein the x-ray image detector comprises an image intensifier, and a diaphragm followed by a CCD or pickup tube, characterized in that the diaphragm is switched between settings corresponding to the low intensity level and the high intensity level of the 2D-images.  
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5. Apparatus according to anyone of claims 1-3, characterized in that the x-ray source operates at different exposure levels corresponding to the low intensity level and the high intensity level of the 2D-images.

6. Apparatus according to anyone of the previous claims, characterized in that the first series of 2D-images and the second series of 2D-images are collected at mutually excluding time-frames.
- 5 7. Apparatus according to anyone of claims 1-5, characterized in that the subsequent images from the first series of 2D-images and the second series of 2D-images are collected alternatingly.
8. Apparatus according to anyone of the previous claims, characterized in that  
10 the x-ray image detector is a flat detector imaging device.
9. Method for acquiring a 3D-image of an object by collecting at least one series of 2D-x-ray images of the object wherein the images are taken from different angles, and the 2D-images are processed into the 3D-image, characterized in that a first series of 2D-images  
15 is acquired at a low intensity level and a second series of 2D-images is acquired at a high intensity level, and which low level is predetermined at a point to substantially avoid saturation of an x-ray image detector, and wherein the images from the first series of 2D-images are merged with corresponding images from the second series of 2D-images prior to processing same into the 3D-image.  
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10. Method according to claim 9, characterized in that prior to processing the 2D-images into the 3D-images, the pixels of the images of the second series of images above a predetermined threshold are replaced by the corresponding pixels of the images of the first series of images.
- 25 11. Method according to claim 9 or 10, characterized in that the thresholding of the second series of 2D-images is performed at a predetermined level which slightly differs for neighbouring pixels of the 2D-images.
- 30 12. Computer program having instructions for acquiring a 3D-image of an object by collecting at least one series of 2D-x-ray images of the object wherein the images are taken from different angles, and the 2D-images are processed into the 3D-image, and wherein a first series of 2D-images is acquired at a low intensity level and a second series of 2D-images is acquired at a high intensity level, and which low level is predetermined at a point to

substantially avoid saturation of an x-ray image detector, and wherein the images from the first series of 2D-images are merged with corresponding images from the second series of 2D-images prior to processing same into the 3D-image.

- 5 13. Data carrier provided with a computer program having instructions for acquiring a 3D-image of an object by collecting at least one series of 2D-x-ray images of the object wherein the images are taken from different angles, and the 2D-images are processed into the 3D-image, and wherein a first series of 2D-images is acquired at a low intensity level and a second series of 2D-images is acquired at a high intensity level, and which low level is  
10 predetermined at a point to substantially avoid saturation of an x-ray image detector, and wherein the images from the first series of 2D-images are merged with corresponding images from the second series of 2D-images prior to processing same into the 3D-image.